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| Unit Details: Probability | |
| Year level: 3/4 Curriculum level: 2 Unit length: 2/3 Weeks | |
| Curriculum learning area: **Mathematics**  Strand: Statistics & **Probability**  Probability  Investigate simple situations that involve elements of chance, recognising equal and different likelihoods and acknowledging uncertainty. | How to introduce the unit to the students (the hook):   * STINK dice games (sheet attached) * [NZ Maths Probability Activities](http://nzmaths.co.nz/probability-units-work) * [Probability Wiki](http://room4sunnynook.wikispaces.com/Probability) |
| Organisation | Abilities/Special Needs/ESOL |
| Whole class introduction activities  Ability and mixed ability groups  Individual and paired (peer) work  Class discussion – whole class and small groups  Teacher conferencing  Self/peer assessment  Whole class celebration of completed writing | **Target groups** – work differentiated by individual needs/outcomes  **Special Needs** – Teacher aide support if timetabled, Teacher support (differentiated/adapted outcomes)  **More able –** differentiated/adapted outcomes, student directed research/tasks (also see Level 2 statistics curriculum indicators)  **ESOL** – ESOL teacher, in class support from Teacher or using buddies, teacher/students modeling language, simplified tasks, oral language activities before probability activities |
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| Key Competency focus: Thinking ✔ Managing Self Relating to Others Participating and Contributing ✔ Using Language, Symbols and Text ✔ | |

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| Digital Literacy Focus |
| Task Definition ✔ Information Seeking Strategies✔ Location and Access  Use of Information ✔ Synthesis  Evaluation✔  e-Learning – Investigate & explore range of probability activities here:<http://room4sunnynook.wikispaces.com/Probability> |
| Global Learning Intentions of unit – the BIG ideas students MUST get |
| *To be able to judge and understand likelihoods in all areas of life as well as being able to understand the differences between theoretical and experimental probability, as likely events sometimes do not occur and unlikely ones do.*  *Things that happen are not always down to chance. It is possible to work out how likely an event is from never to always.*  *Understanding probability will increase success in games of chance.*  **Introduction to Probability**  The student will be able to:  Define experiment, outcome, event, probability and equally likely.  Restate the formula for finding the probability of an event.  Determine the outcomes and probabilities for experiments.  Interact with die rolls and spinners to help predict the outcome of experiments.  Distinguish between an event and an outcome for an experiment.  Recognize the difference between outcomes that are equally likely and not equally likely to occur.  Apply probability concepts to complete five interactive exercises.  **Certain and Impossible Events**  The student will be able to:  Define certain event, impossible event.  Describe and list the contents of a standard deck of 52 playing cards.  Examine the probabilities of experiments with certain outcomes.  Examine the probabilities of experiments with impossible outcomes  Evaluate interactive die rolls and spinners in relation to certain and impossible events.  Explain the difference between certain and impossible events.  Compute the probability of a certain event.  Compute the probability of an impossible event.  Apply concepts to complete five interactive exercises.  See here: [Probability - The Big Ideas](http://mathfest.ca/mpf2013/probability.html) |
| Difficulties anticipated |
| Concepts highlighted |
| Key Vocabulary for this unit |
| Lucky, unlucky, always happens, must happen, might happen, will probably happen, can’t happen, possible, impossible, likely, unlikely, probably, maybe, might certainly. |
| Assessment/culminating activity |
| Self Assessment ✔ Peer assessment  Learning reflection ✔Presentation  Display  Podcast / wiki entry / blog entry  Performance  Practical Skills ✔ Teacher Observation ✔Learning conversation  Written assessment  e-asTTle assessment  Oral assessment  Other (describe)  **Self assessmen**t: Improved strategies when using games of chance  **Presentation:**  **Practical Skills:** Greater competence and success when attempting probability activities  **Teacher observation**: Students use of probability strategies to achieve greater success |

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| Unit implementation – Learning experiences and instruction | | |
| Learning Intentions  We Are Learning To... (WALT) | Learning Experiences / Activities | Assessment  Diagnostic / Formative / Summative / Feedback  Success Criteria  We Are Successful When... (WASW) |
| **Lesson 1**  What is probability? (the chances of something happening.)  **Key Ideas** –  \*When there are 2 outcomes you have a 50% chance of being correct. (2 equally likely outcomes)  \*that what has happened in the past does not affect the future  \*when there are lots of chances this does not mean it will always work out to be 50%.    **Introduction** – Black and White – Page 40, Rigby Maths – (Whole Class Activity).  **Lesson 2**  Tuning into Probability –  \*Discuss what is possible and impossible.  \*With a partner look through magazines and books. Write a list of what is possible and impossible. Glue into Strand Learning Scrapbook.  Discuss – When you play a game do you know who is going to win? Why not?  \*Predict what will happen when you toss a coin. Complete activity – Toss a Coin – Page 12/13 Macmillian Investigation Book.  \*Talk about the element of chance – Dice, spinners, cards etc.  \*Play – Name Your Game – Page 44, Rigby Maths – Student Book.  **Lesson 3**  Developing Ideas about Probability - Learning Centre Activities  \*Class Activity – Discuss events that are certain to happen tomorrow and events that might happen. Record in Strand Learning Scrapbook.  **Activity 1** – Colour Combinations  Make a spinner to show colours – BLM 16, Page 121.  Player 1 uses the spinner to choose colours of unifix blocks. They put in a random number of blocks into a bag. Eg, 4 blue and 6 white. Player 2 has 3 turns at taking out 2 cubes and putting them back again. After their final go, they guess how many white and blue blocks are in the bag. Further ideas – Footy Fever, Page 41, Teachers Guide, Rigby Maths.  **Lesson 4**  **Learning Centre Activity 2**  The Track Game – Student Book – Rigby Maths, Page 45. Using dice and counters.  **Lesson 5**  **The Monty Hall Problem.**  Groups of 3 – Quiz master, contestant and Recorder. Give each group 3 cups, and an object that can be hidden under the cup. Hide the object under a cup. The contestant chooses a cup and the quiz master lift it up. The contestant then has a chance of changing their choice. The quiz master shows which cup is hiding the object.  Further ideas – Page 47/48 – Book 9 – Teaching Number through Statistics. |  |  |
| **Resources/Materials**  Book 9 – teaching Number Through Statistics  Macmillan Mathematics – Investigation Book, Level 2, Collecting data.  Rigby Maths for New Zealand – 2 – Teacher Resource Book and Student Book.  Unifix Blocks, Bags, Dice, Counters, Coins.  **Probability Wik**i - [Probability](http://room4sunnynook.wikispaces.com/Probability)  **Probability Resources** - Middle Team Wiki - [Teacher’s Area](http://spsmiddleteam.wikispaces.com/Teachers)  YouTube - [Probability videos](https://www.youtube.com/watch?v=X0OyeDsQJqA) (many links on right hand side) | | |
| **End of unit means of recording student reflection** | Students record in pairs and independently what they have learnt using the vocabulary of probability e.g. *“the probability of this happening is 1 in 6 because …....”. “This has a greater/less chance of happening because …..”*  Students record how their strategies have changed in light of their experiences with the probability unit. | Possible focus questions for reflection:   * What strategies did I use before? * Did I have a strategy? * What strategies do I use now? * How do I work out the probability of an event happening? * How can I use this knowledge in everyday experiences? |
| **Reflection for Subsequent Planning** | | |

